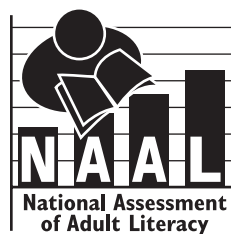


**U.S. Department of Education**  
Institute of Education Sciences  
NCES 2006-471





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NCES 2006-471

# **Key Concepts and Features of the 2003 National Assessment of Adult Literacy**

**December 2005**

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TODAY'S TIP! Wash  
bulletts, garlic and small o  
storage conditions to preve

EQUIPMENT! **naal**

There are a number of storage  
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## INTRODUCTION

### What is the 2003 NAAL?

Sponsored by the National Center for Education Statistics (NCES) in the U.S. Department of Education's Institute of Education Sciences, the 2003 National Assessment of Adult Literacy (NAAL) is a nationally representative assessment of literacy among adults (age 16 and older) residing in households and prisons in the United States. It is the first assessment of the nation's progress in adult literacy since the 1992 National Adult Literacy Survey (NALS).

### What do the results cover?

Results from the 2003 NAAL cover the status and progress of literacy in the nation, the literacy skill levels of American adults (including the least-literate adults), various factors associated with literacy, and the application of literacy skills to health-related materials. NAAL also will provide the results of state-level assessments for six participating states and a national study on literacy among the prison population.

The first results from the 2003 NAAL appear in *A First Look at the Literacy of America's Adults in the 21st Century* (Kutner, Greenberg, and Baer 2005). Later reports will provide additional results from and information about the assessment.

### What is the purpose of this publication?

The 2003 NAAL is a complex assessment with several components and various types of data. The primary purpose of this publication is to describe the assessment's key features and data types. Thus, the publication covers the critical concepts and features carried over from the 1992 assessment, as well as those new to the 2003 assessment—for example, new performance levels that are used to report results (see section 2) and new components that provide expanded data on the least-literate adults and on the role of basic skills in adult literacy performance (see section 3). By providing an overall picture of important goals and aspects of the 2003 NAAL, the publication provides a context for interpreting the results.



# 1

## VIEWING ADULT LITERACY FROM A FUNCTIONAL PERSPECTIVE

### **NAAL measures how well U.S. adults perform tasks with printed materials**

As a part of their everyday lives, adults in the United States interact with a variety of printed and other written materials to perform a multitude of tasks. A comprehensive list of such tasks would be virtually endless. It would include such activities as balancing a checkbook, following directions on a prescription medicine bottle, filling out a job application, consulting a bus schedule, correctly interpreting a chart in the newspaper, and using written instructions to operate a voting machine.

The National Assessment of Adult Literacy (NAAL) measures the ability of a nationally representative sample of adults to perform literacy tasks similar to those that they encounter in their daily lives. Statistical procedures ensure that NAAL participants represent the entire population of U.S. adults who are age 16 and older and live in households or prisons. In 2003, the 19,714 adults who participated in NAAL represented a U.S. adult population of about 222 million. (This population estimate was calculated by NAAL researchers based on data from the U.S. Census Bureau's 2003 Current Population Survey and the Bureau of Justice Statistics' midyear 2003 National Prisoner Statistics.)

Like other adults, NAAL participants bring to literacy tasks a full range of backgrounds, experiences, and skill levels. Like real-life tasks, NAAL tasks vary with respect to the difficulty of the materials used as well as the complexity of the actions to be performed. However, in order to be fair to all participants, none of the tasks require specialized background knowledge, and all of them were reviewed for bias against particular groups.

### **Adults need literacy skills in order to function**

Literacy is not a single skill or quality that one either possesses or lacks. Rather, it encompasses various types of skills that different individuals possess to varying degrees. There are different levels and types of literacy, which reflect the ability to perform a wide variety of tasks using written materials that differ in nature and complexity. A common thread across all literacy tasks is that each has a purpose—whether that purpose is to pay the telephone bill or to understand a piece of poetry. All U.S. adults must successfully perform literacy tasks in order to adequately function—that is, to meet personal and employment goals as well as contribute to the community.

NAAL tasks reflect a definition of literacy that emphasizes the use of written materials to function adequately in one's environment and to develop as an individual. Of course, the actual literacy tasks that individuals must perform in their daily lives vary to some extent depending on the nature of their work and personal goals. However, virtually all literacy tasks require certain underlying skills, such as the ability to read and understand common words. NAAL measures adults' performance on a range of tasks mimicking actual tasks encountered by adults in the United States. Adults with very low levels of performance on NAAL tasks may be unable to function adequately in 21st century America.



### NAAL examines three literacy areas—prose, document, and quantitative

NAAL reports a separate score for each of three literacy areas:

*Prose literacy* refers to the knowledge and skills needed to perform prose tasks—that is, to search, comprehend, and use continuous texts. Prose examples include editorials, news stories, brochures, and instructional materials.

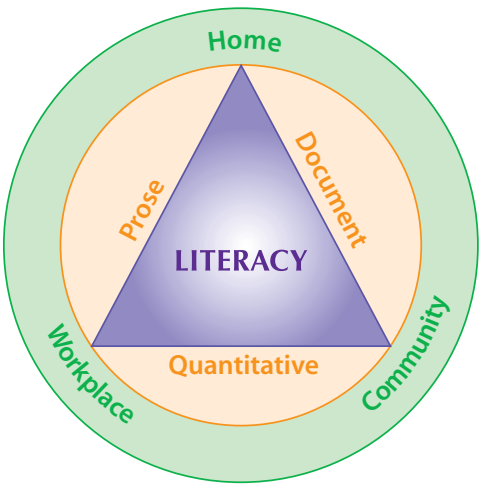
*Document literacy* refers to the knowledge and skills needed to perform document tasks—that is, to search, comprehend, and use noncontinuous texts in various formats. Document examples include job applications, payroll forms, transportation schedules, maps, tables, and drug or food labels.

*Quantitative literacy* refers to the knowledge and skills required to perform quantitative tasks—that is, to identify and perform computations, either alone or sequentially, using numbers embedded in printed materials. Examples include balancing a checkbook, computing a tip, completing an order form, or determining the amount of interest on a loan from an advertisement.

The *Framework for the 2003 National Assessment of Adult Literacy* (White and McCloskey forthcoming) discusses the three literacy areas in detail. Underlying the prose, document, and quantitative tasks is NAAL's *task-based definition of literacy* (figure 1).

**Figure 1. Task-based definition of literacy**

**Literacy** is the ability to use printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential.



NAAL's task-based definition of literacy implies the ability to meet literacy demands at home, in the workplace, and in the community by performing prose, document, and quantitative tasks.

SOURCE: White, S., and McCloskey, M. (forthcoming). *Framework for the 2003 National Assessment of Adult Literacy* (NCES 2006-473). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

## Sample assessment tasks have been released to the public

To provide a clearer picture of the types of tasks that NAAL participants are asked to perform, the National Center for Education Statistics (NCES) has released numerous assessment tasks (i.e., test questions) that either were used in the 2003 NAAL or are similar to those used in the 2003 NAAL. Most of these tasks were used in the 1992 National Adult Literacy Survey (NALS), from which NAAL evolved. Below are a few examples. Almost 100 tasks are currently available on the NAAL website (<http://nces.ed.gov/naal/TestQuestions.asp>). NCES plans to make more assessment tasks available in the future, including many of those used in 2003. However, not all of the tasks used in the 2003 administration of NAAL can be made public, because some of them will be reused in future administrations to allow comparisons across time.

Figure 2 shows an easy prose task (performed correctly by 83 percent of adults). This task requires participants to search a short text to locate a single piece of easily identifiable information. In more difficult prose tasks, the requirements include making inferences, comparing and contrasting information, and synthesizing pieces of information from long and complex passages.

**Figure 2. Example of an easy prose task**

*Underline the sentence that tells how the Social Security Administration defines the term "blind."*

### WHAT IS SSI?

SSI stands for supplemental security income. It is a Federal program run by the Social Security Administration. It pays monthly checks to aged, blind, and disabled people who do not have much income or resources.

Under SSI, *aged* means you are 65 or older. *Blind* means the vision in your better eye is 20/200 or less or you have a limited visual field of 20 degrees or less. *Disabled* means you have a severe physical or mental condition that keeps you from doing any substantial gainful work, and medical evidence shows it is expected to last at least 12 months or result in death.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992 National Adult Literacy Survey (NALS). Available in the Sample Questions section of the NAAL website (<http://nces.ed.gov/naal/TestQuestions.asp>).

Figure 3 shows a moderately difficult document task (performed correctly by 56 percent of adults). This task requires participants to determine which type of sandpaper to buy for a specific job. To do this, they need to identify the correct row, column, and cell in a complex table that contains subcategories. To select the correct row, participants must find the “WOOD” category and the “Preparation for Sealing” subcategory in the list at the far left of the table. To select the correct column and cell, they must first identify “GARNET” as the main column heading that is relevant, then follow the row they selected to the shaded cell under this main heading. Finally, they must connect the abbreviation “F” in the subordinate column heading with the word “Fine” in the key below the table.

More difficult document tasks have requirements such as comparing, contrasting, and drawing high-level inferences from multiple pieces of information embedded in complex documents. At the other end of the spectrum, the simplest document tasks require only actions such as signing a form in the right place or appropriately filling in blanks.

**Figure 3. Example of a moderately difficult document task**

You need to smooth wood in preparation for sealing and plan to buy garnet sandpaper. What type of sandpaper should you buy?

ABRASIVE SELECTION GUIDE																			
MATERIAL & OPERATION	PRODUCTION®					GARNET				WETORDRY®				PRE-CUT®		EMERY			
	EC	C	M	F	EF	C	M	F	EF	VF	EF	SF	UF	VF	EF	C	M	F	
WOOD																			
Paint Removal																			
Heavy Stock Removal																			
Moderate Stock Removal																			
Preparation for Sealing																			
After Sealer																			
Between Coats																			
After Final Coat																			
METAL																			
Rust and Paint Removal																			
Light Stock Removal																			
Preparation for Priming																			
Finishing and Polishing																			
After Primer																			
Between Coats																			
After Final Coat																			
PLASTIC & FIBERGLASS																			
Shaping																			
Light Stock Removal																			
Finishing & Scuffing																			

EC = Extra Coarse   C = Coarse   M = Medium   F = Fine   VF = Very Fine   EF = Extra Fine   SF = Super Fine   UF = Ultra Fine

SAFETY INFORMATION:

■ Wear approved safety goggles when sanding.

■ Use particle/dust mask or other means to prevent inhalation of sanding dust.

■ When using power tools, follow manufacturer's recommended procedures and safety instructions.

NOTE: Reprinted by permission of and copyrighted by the 3M Company.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992 National Adult Literacy Survey (NALS). Available in the Sample Questions section of the NAAL website (<http://nces.ed.gov/naal/TestQuestions.asp>).



Figure 4 shows one of the more difficult quantitative tasks (performed correctly by 29 percent of adults). This task requires using information on an automobile maintenance record to compute the gas mileage since the previous fill-up. To perform this task, participants must determine which numbers on the maintenance record are relevant to the task and what specific computations must be performed to get the answer. The appropriate steps are to subtract the mileage on March 2 (42,775) from the mileage on March 9 (43,083), then divide the result (308 miles) by the number of gallons used (12.5). If participants perform these computation steps correctly, they will find that the car got about 25 miles per gallon since it was filled with gas on March 2. If participants get any of the computation steps wrong, however, they will not obtain the correct answer. A simpler task might involve solving a single equation using only numbers that actually appear in the document.

**Figure 4. Example of a difficult quantitative task**

On March 9 you filled your car with gas. Calculate how many miles per gallon your car got since you filled it up with gas on March 2.					
AUTOMOBILE MAINTENANCE RECORD					
Month of <u>March</u> 19 <u>92</u>					
Date	Mileage	Gasoline		Repairs	Oil and Grease
		No. Gals	Amount		
1					
2	42,775	13.1	19.10		
3					
4					
5					
6					
7					
8					
9	43,083	12.5	18.25		
10					
11					
12					

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992 National Adult Literacy Survey (NALS). Available in the Sample Questions section of the NAAL website (<http://nces.ed.gov/naal/TestQuestions.asp>).

## NAAL includes a new measure of health literacy

The U.S. Department of Health and Human Services (HHS) has adopted the following definition of health literacy: “The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (Selden et al. 2000, cited in HHS 2000). Although health literacy involves factors that NAAL cannot measure—such as the ability to communicate orally—NAAL will provide a portrait of one important aspect of the health literacy of the U.S. adult population.

NAAL’s health literacy component is the first-ever national assessment designed specifically to measure adults’ ability to use literacy skills to read and understand health-related information. Health-related materials used in the assessment include medication information, medical instructions, health insurance forms, and prevention and wellness information. Nearly one-fifth of the NAAL tasks are health related, and all participants perform some health-related tasks. One example appears in figure 5.

Each health-related task is also classified as a prose, document, or quantitative task. Thus, health-related tasks are included with other tasks when calculating the prose, document, and quantitative literacy scores. However, NAAL also includes a separate health literacy score, based solely on the health-related tasks. This score will measure the ability of adults with various demographic and background characteristics to effectively use health-related information, provide input for the development of health-related information and programs for these adults, and establish a baseline for tracking progress in future assessments.

**Figure 5. Example of a health-related task**

*Copy three food sources, named in the almanac, that contain vitamin E.*

Vitamin E (tocopherol)—helps protect red blood cells. May aid the circulatory system and counteract the aging process. Best sources: wheat germ, whole grains, eggs, peanuts, organ meats, margarine, vegetable oils, green leafy vegetables.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992 National Adult Literacy Survey (NALS). Available in the Sample Questions section of the NAAL website (<http://nces.ed.gov/naal/TestQuestions.asp>).

# 2

## COMPARING ADULT LITERACY IN 1992 AND 2003

### NAAL measures the three types of literacy that were measured in 1992

One important goal of the 2003 National Assessment of Adult Literacy (NAAL) is to provide information on changes in adult literacy performance since 1992. Accordingly, the 2003 NAAL provides scores for the same three literacy areas—prose, document, and quantitative—that were examined in the 1992 National Adult Literacy Survey (NALS). In order to provide trend data on adult literacy in the future, the National Center for Education Statistics (NCES) plans to conduct assessments of adult literacy periodically.

### Cross-year comparisons are available for the nation, one state, and prisons

Changes over time in the literacy of adults living in the United States are of interest to diverse audiences, ranging from the general public to policymakers. For example, policymakers may use information about literacy changes to justify the creation or improvement of literacy programs, to provide grants for further research, or for accountability purposes. Libraries may use this information to help ensure that their policies and materials are appropriate for a broad spectrum of adults. Education researchers may explore possible causes of literacy changes and possible methods for promoting higher levels of literacy among adults. Members of the general public may be interested to know whether recent changes in the nation's demographic profile have been accompanied by changes in adult literacy.

In addition to results for the nation, both the 1992 NALS and the 2003 NAAL provide the results of state-level assessments for those states that chose to participate in state assessments. Participating states can compare their state with other participating states and with the nation. In 2003, the following states participated in state assessments: Kentucky, Maryland, Massachusetts, Missouri, New York, and Oklahoma. State-level results can help states determine where to target investment in adult education, training programs, and other services. In addition, the results establish a baseline for future assessments. Because New York participated in 1992 as well as in 2003, the 2003 results for New York include information on state-level changes across time.

Like the 1992 NALS, the 2003 NAAL includes an assessment of literacy among the prison population. This population includes only adults in state and federal prisons, not those in local jails or other types of institutions. (Sampled adults living in households but temporarily in local jails—where the median stay is about 2 weeks—were considered part of the household population, not the prison population. Since the data collection period was about 10 months long, these adults were interviewed in their homes when they got out of jail.) In both assessment years, the prison sample was representative of the prison population at the national level, allowing separate literacy estimates for this population as well as analysis of changes across time. Results provide demographic and performance data for the prison population in comparison to the general U.S. adult population.



## Design and analysis methods ensure accurate comparisons across years

In 1992 and 2003, the same sampling and data collection procedures were used to ensure that comparable populations were assessed in both years. The 2003 NAAL also used some of the same assessment tasks that were used in the 1992 NALS. About 45 percent of the tasks used in 2003 were drawn from those used in 1992, while the remainder were newly created for the 2003 assessment. According to the widely used reference work *Test Equating* (Kolen and Brennan 1995, p. 248), using 20 percent of the same items is sufficient to allow for comparisons between tests, provided that new items are developed following specifications similar to those used in developing the old items. The newly created NAAL tasks were modeled after the 1992 tasks—having about the same average level of difficulty, requiring similar skills for successful completion, and covering the same content areas (home and family, health and safety, community and citizenship, consumer economics, work, and leisure and recreation). Item response theory (IRT; see, e.g., Baker 2001) was employed to link the 1992 and 2003 scales using the tasks common to both years. Another step taken to ensure accurate comparisons across years was to recompute the 1992 scores using the 2003 analysis procedures, which differed in some respects from those originally used to analyze the 1992 data (e.g., the rules for dealing with missing data had been modified). In addition, results from both 1992 and 2003 were reported using a newly developed set of performance levels (discussed below).

## Performance levels describe task performance for various score ranges

For some purposes, it is useful to report average scores. For example, the average prose, document, or quantitative literacy score of one group (e.g., males) can be compared with that of another (e.g., females). Also, the average score of a particular group or of the entire population of U.S. adults residing in households and prisons in 1992 can be compared with the score in 2003.

Another useful way to report results is by grouping adults with similar scores into a relatively small number of categories, generally referred to as *performance levels*. Reporting the percentages of adults scoring at various performance levels is somewhat analogous to reporting the percentages of students receiving various letter grades (e.g., an A or a B) on a test. Performance levels serve as a useful tool for identifying and characterizing the relative strengths and weaknesses of adults falling within various ranges of literacy ability. Breaking the adult population into these levels allows analysts, policymakers, and others to examine and discuss the typical performance and capabilities of specified proportions of the adult population.

NCES originally used five “literacy levels” to report the 1992 results. In preparation for reporting on adult literacy performance in 2003, NCES asked the National Research Council (NRC) to evaluate the original 1992 literacy levels and recommend a set of performance levels that could be used in reporting 2003 results and also applied to 1992 results in order to make comparisons across years. In response to NCES’s request, NRC established the Committee on Performance Levels for Adult Literacy. A preliminary report released by the committee in April 2005 (Hauser et al. 2005) examines the original 1992 literacy levels, outlines the newly developed performance levels, and details the methodology and rationale underlying the new levels. The committee’s report discusses each step in the process of developing the new levels. The following brief discussion highlights only a few key points.

## New levels were developed in an open, public, and scientific way

According to the Committee on Performance Levels for Adult Literacy (Hauser et al. 2005), the original 1992 literacy levels “were not meant to reflect policy-based judgments about expectations for adult literacy. That is, the procedures used to develop the assessment did not involve identifying the level of skills adults need in order to function adequately in society. When findings . . . were released, however, the . . . levels were interpreted and discussed as if they represented standards for the level of literacy adults should have,” leading to “unsupported inferences.” The committee concluded that “some of the more important details about the process for determining the 1992 . . . levels were not specified” and that “a more open and public process combined with more explicit documentation would lead to better understanding of how the . . . levels were determined and what inferences could be based on them.”

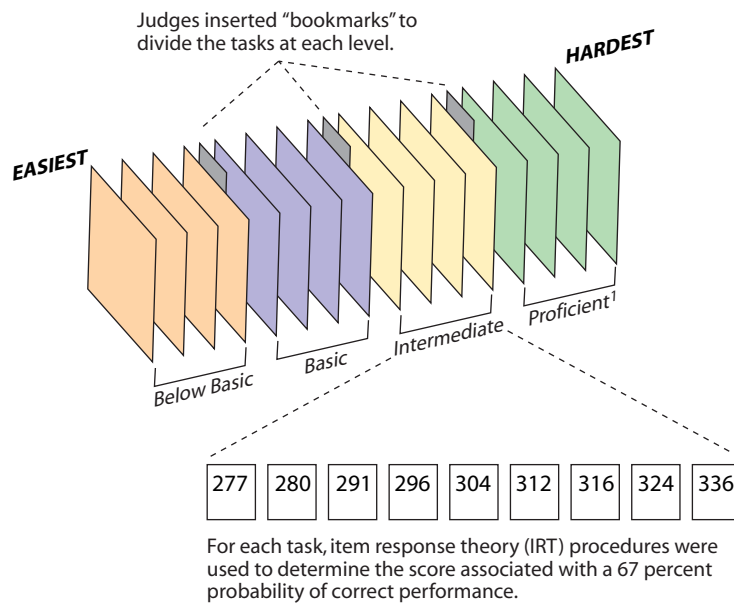
While development of the 1992 literacy levels had begun with rating and sorting the assessment tasks according to cognitive complexity (see Kirsch et al. 2000 for details), development of the new performance levels involved initial specification of levels intended to correspond to policy-relevant categories of adults. The committee specified the levels after reviewing information about the 1992 and 2003 assessments and asking stakeholders to identify the ways in which results would be used. The committee then created preliminary descriptions that characterized the literacy skills of adults at each performance level. (These preliminary descriptions of the levels were refined at various points in the development process.)

The next step was to determine the score ranges to be included in each level. After reviewing the literature about methods for determining score ranges, the committee decided to use the “bookmark” method. The method was implemented by holding two sessions with panels of “judges” consisting of adult literacy practitioners, officials with state offices of adult education, middle and high school teachers, and experts in industrial and organizational psychology. The judges received descriptions of the performance levels along with booklets of assessment tasks, arranged from easiest to hardest. Each booklet contained tasks from a single literacy area (prose, document, or quantitative). (For the first session, the booklets contained the tasks used in 1992; for the second session, they contained the tasks used in 2003.) The judges’ job was to place “bookmarks” in the booklets to identify the sets of tasks that adults at each level were “likely” to perform correctly. Following the recommendation of the designers of the bookmark method (Mitzel et al. 2001), “likely” was defined as 67 percent of the time (or, stated another way, two out of three times).

For each task, IRT procedures were used to determine the score associated with a 67 percent probability of performing the task correctly. As noted in the committee’s report (Hauser et al. 2005), a hallmark of IRT is the way it describes the relationship between the probability of a correct response and the scores on a proficiency scale. The committee established preliminary score ranges for the performance levels based on the scores corresponding to a 67 percent success rate on tasks that judges had included in each level (figure 6).

income	8a	Taxable
attach	8b	Tax-excl
forms W-2 and	8a	Ordinary
W-2G have	8b	Qualified
also attach	10	Taxable
Form(s) 1099-AT	11	Ordinary
File with	12	Qualified
return.	13a	Capital G
	8b	if book
If you did not	14	Other ge
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**Figure 6. Use of the bookmark method in developing the new performance levels**



<sup>1</sup>The National Research Council's Committee on Performance Levels for Adult Literacy originally called this level "Advanced," but the National Center for Education Statistics changed the title to "Proficient" in order to better convey how adults scoring at this level perform.

NOTE: This figure is a simplified representation that is not intended to show actual numbers of tasks or actual scores associated with tasks.

SOURCE: U.S. Department of Education, National Center for Education Statistics. Based on information about the bookmark method provided in *Measuring Literacy: Performance Levels for Adults, Interim Report* (Hauser et al. 2005).

The committee's report discusses in detail the various "technical and nontechnical considerations" leading to the choice of a 67 percent success rate for developing the new performance levels. One reason is that the 80 percent success rate used by NCES to develop the 1992 literacy levels was judged "overly stringent given the uses of the assessment results." In the committee's opinion, such a stringent criterion is needed when an assessment (e.g., a licensing examination) requires "a high degree of certainty that the individual has truly mastered the specific content or skills," but not when an assessment (e.g., NALS or NAAL) has low stakes, "that is, no scores are reported for individuals, and no decisions affecting an individual are based on the results."

For each of the three literacy areas, the bookmark method generated "cut scores" that indicated the lowest score to be included in each performance level. For example, a cut score of 244 marked the lower boundary of the *Basic* level of quantitative literacy. To refine the bookmark-based cut scores, they were compared with the 1992 scores associated with selected background variables, including educational attainment. In setting cut scores, the judges had referred only to skill-based descriptions of the levels (e.g., "Is able to ..."), not to any information about background variables. However, the committee felt that an examination of background variables would be useful in evaluating the reasonableness of the resulting scores. The criterion for selecting the background variables was potential usefulness for distinguishing between performance levels. For example, the *Basic* level was intended to correspond to adults who are ready for GED preparation services, while the *Below Basic* level was intended to correspond to adults who are in need of basic adult literacy services (including

services for adult English language learners). The following background variables were identified as relevant to distinguishing between these two levels: having some high school education (versus none at all) and reporting that one reads well (versus not well).

The committee developed a set of rules and procedures for using the selected background variables to make adjustments to the bookmark-based cut scores. For the *Basic* level of prose and document literacy, the cut scores associated with the selected background variables were about the same as the bookmark-based scores, which therefore did not need to be adjusted. For the *Intermediate* level of prose and document literacy, the cut scores associated with the background variables were somewhat lower than the bookmark-based cut scores (although the differences were relatively small when considering *only* educational attainment instead of all the variables identified as relevant). The committee's rules and procedures resulted in minor downward adjustments to these bookmark-based cut scores. For the highest level of prose and document literacy and for all levels of quantitative literacy, the cut scores associated with the background variables were also lower than the bookmark-based scores, and the differences were greater. For example, analysis of 1992 scores by the background variables yielded a cut score of 207 as the lower boundary of the *Basic* level of quantitative literacy (compared with the bookmark-based cut score of 244). Since analysis by selected background variables was intended merely to complement the bookmark method, adjustments were relatively minor even in cases with relatively large differences between the bookmark-based scores and the scores associated with background variables. In this example, the final cut score for the *Basic* level of quantitative literacy was 235. Table 1 shows the final score ranges associated with the new performance levels.

**Table 1. Score ranges associated with the new performance levels, by literacy area**

	Below Basic	Basic	Intermediate	Proficient <sup>1</sup>
<b>Prose</b>	0–209	210–264	265–339	340–500
<b>Document</b>	0–204	205–249	250–334	335–500
<b>Quantitative</b>	0–234	235–289	290–349	350–500

<sup>1</sup>The National Research Council's Committee on Performance Levels for Adult Literacy originally called this level "Advanced," but the National Center for Education Statistics changed the title to "Proficient" in order to better convey how adults scoring at this level perform.

SOURCE: Hauser, R.M., Edley, C.F., Jr., Koenig, J.A., and Elliot, S.W. (Eds.). (2005). *Measuring Literacy: Performance Levels for Adults, Interim Report*. National Research Council, Board on Testing and Assessment, Committee on Performance Levels for Adult Literacy. Washington, DC: The National Academies Press.

**The new levels are supplemented by a *Nonliterate in English* category**

In addition to the four performance levels that were developed using the bookmark method, the Committee on Performance Levels for Adult Literacy also recommended that NCES report on a fifth category—*Nonliterate in English*. This category includes two groups of adults:

- Two percent of the adults who were selected to participate in the 2003 NAAL could not be tested—in other words, could not participate in NAAL at all—because they knew neither English nor Spanish (the other language spoken by interviewers in most areas). The *Nonliterate in English* category includes these adults because their inability to communicate in English indicates a lack of English literacy skills.

As defined in the NRC committee's report (Hauser et al. 2005), the *Nonliterate in English* category does not include the group of adults who could not be tested because they knew neither English nor Spanish. However, NCES decided to include this group in order to provide a more complete representation of the proportion of U.S. adults who are not literate in English.

- Three percent of the adults who *were* tested in 2003 did not take the main part of the assessment, which was too difficult for them, but did take an alternative assessment specifically designed for the least-literate adults. Questions on the alternative assessment were asked in either English or Spanish, but all written materials were in English only. While some adults in this group displayed minimal English literacy skills (e.g., the ability to identify a letter or a common word in a simple text), others lacked such skills entirely. (For example, an adult who was able to attempt the alternative assessment by following oral Spanish instructions might still prove unable to do even the minimal amount of English reading needed to provide any correct answers.) The *Nonliterate in English* category includes these adults because their English literacy skills are minimal at best.

In 2003, the two groups of adults classified as *Nonliterate in English*—the 2 percent who could not be tested because of a language barrier (i.e., inability to communicate in English or Spanish) and the 3 percent who took the alternative assessment—accounted for 11 million adults, or 5 percent of the population. These adults range from having no English literacy skills to being able to “recognize some letters, numbers, or common sight words in everyday contexts” (Hauser et al. 2005).

It is not possible to report on the *Nonliterate in English* category for 1992. This is because the 1992 NALS did not include an alternative assessment for the least-literate adults, and an unknown proportion of the *Below Basic* population in that year is likely to have required such an assessment. (In 2003, adults were routed to the alternative assessment if they were unable to successfully perform a minimum number of easy literacy screening tasks. Although the 1992 assessment also began with a set of easy tasks, these tasks were different from the ones used in 2003. In 2003, moreover, questions for the screening tasks could be offered in Spanish, whereas only English was used in 1992.)

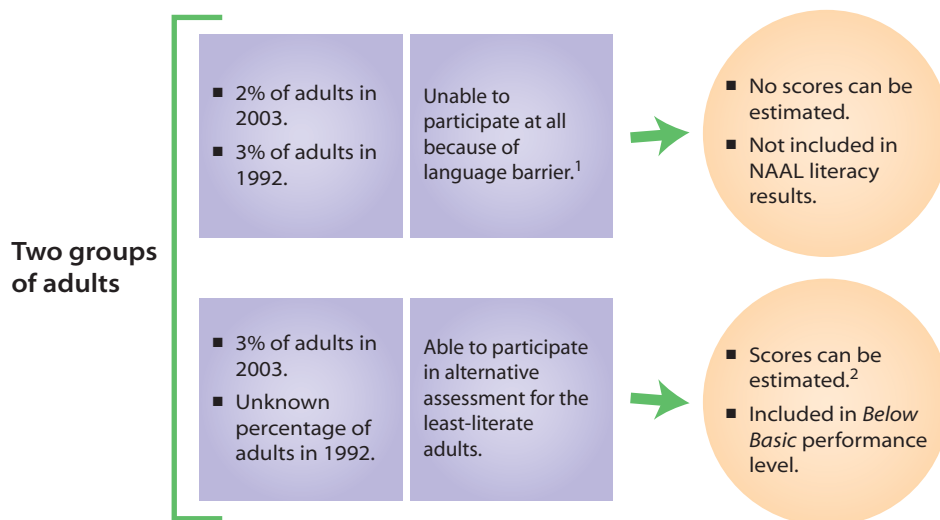
As described above, the *Nonliterate in English* category includes all adults identified as lacking literacy in English—not only the lowest performers among adults who were able to participate in NAAL, but also adults who could not be tested because of a language barrier. In contrast, NAAL literacy results—reported in terms of scores and performance levels—provide information only about adults who could be tested. Figure 7 summarizes the composition of the *Nonliterate in English* category and its relationship to the NAAL literacy results.

The reason that NAAL literacy results do not include adults who could not be tested as a result of a language barrier is that no performance data are available for these adults and it cannot be assumed that they would perform similarly to other adults with similar characteristics (e.g., age, gender, and education level). Such an assumption would be the basis of any approach designed to estimate their performance using a statistical model in the absence of data. While this assumption could be made for adults who failed to participate for reasons that do not relate to literacy (e.g., unavailability), it would overestimate the performance of adults who were untestable because of a language barrier. On the other hand, some of these untestable adults might have been able to perform a few of the easiest tasks correctly if, for example, the instructions had been given in their native language. There is no way to know for certain whether individual untestable adults would or would not have been able to provide a few correct answers.



**Figure 7. The *Nonliterate in English* category**

About 3 percent of adults in 1992 (vs. about 2 percent in 2003) were considered to be untestable as a result of a language barrier. The fact that interviewers administering literacy screening tasks in 2003 had the option of asking the questions in Spanish may be one reason that more adults could be tested in that year.



<sup>1</sup>Adults in this group could communicate in neither English nor Spanish. (Although the assessment tasks measure literacy in English only, bilingual interviewers were available in most areas.)

<sup>2</sup>These adults' performance on a set of seven easy screening tasks is included when computing NAAL literacy results. (The screening tasks were used to determine which adults required the alternative assessment. For more information, see "The least-literate adults take an alternative assessment," in section 3.)

NOTE: Adults are defined as people age 16 and older living in households or prisons. The *Nonliterate in English* category is reported only for 2003. This category is not reported for 1992 because there was no alternative assessment in 1992 and an unknown proportion of the *Below Basic* population in that year is likely to have required such an assessment.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992 National Adult Literacy Survey (NALS) and 2003 National Assessment of Adult Literacy (NAAL).

## NCES adopted the new levels and refined their descriptions

The new performance levels and related findings were presented to NCES as recommendations. Having accepted the general recommendations, NCES incorporated a few refinements before using the levels to report results. Table 2 presents descriptions and illustrative tasks selected by NCES to concisely convey the meaning of each level. More extensive descriptions of the levels appear in the report by the Committee on Performance Levels for Adult Literacy (Hauser et al. 2005). The committee provides a separate description of each level for each of the three literacy areas (prose, document, and quantitative).

The new performance levels will be featured in publications that report on adult literacy performance in 2003 and differences in performance between 1992 and 2003. Figure 8 shows the distribution of adults across the new levels in both years. More detailed comparisons of performance across years appear in *A First Look at the Literacy of America's Adults in the 21st Century* (Kutner, Greenberg, and Baer 2005).

**Table 2. Overview of the new performance levels**

Level and definition	Key abilities associated with level	Sample tasks typical of level
<b>Below Basic</b> indicates no more than the most simple and concrete literacy skills.	<p>Adults at the <i>Below Basic</i> level<sup>1</sup> range from being nonliterate in English to having the abilities listed below:</p> <ul style="list-style-type: none"> <li>• locating easily identifiable information in short, commonplace <b>prose</b> texts</li> <li>• locating easily identifiable information and following written instructions in simple <b>documents</b> (e.g., charts or forms)</li> <li>• locating numbers and using them to perform simple <b>quantitative</b> operations (primarily addition) when the mathematical information is very concrete and familiar</li> </ul>	<ul style="list-style-type: none"> <li>• searching a short, simple text to find out what a patient is allowed to drink before a medical test</li> <li>• signing a form</li> <li>• adding the amounts on a bank deposit slip</li> </ul>
<b>Basic</b> indicates skills necessary to perform simple and everyday literacy activities.	<ul style="list-style-type: none"> <li>• reading and understanding information in short, commonplace <b>prose</b> texts</li> <li>• reading and understanding information in simple <b>documents</b></li> <li>• locating easily identifiable <b>quantitative</b> information and using it to solve simple, one-step problems when the arithmetic operation is specified or easily inferred</li> </ul>	<ul style="list-style-type: none"> <li>• finding in a pamphlet for prospective jurors an explanation of how people were selected for the jury pool</li> <li>• using a television guide to find out what programs are on at a specific time</li> <li>• comparing the ticket prices for two events</li> </ul>
<b>Intermediate</b> indicates skills necessary to perform moderately challenging literacy activities.	<ul style="list-style-type: none"> <li>• reading and understanding moderately dense, less commonplace <b>prose</b> texts as well as summarizing, making simple inferences, determining cause and effect, and recognizing the author's purpose</li> <li>• locating information in dense, complex <b>documents</b> and making simple inferences about the information</li> <li>• locating less familiar <b>quantitative</b> information and using it to solve problems when the arithmetic operation is not specified or easily inferred</li> </ul>	<ul style="list-style-type: none"> <li>• consulting reference materials to determine which foods contain a particular vitamin</li> <li>• identifying a specific location on a map</li> <li>• calculating the total cost of ordering specific office supplies from a catalog</li> </ul>
<b>Proficient</b> indicates skills necessary to perform more complex and challenging literacy activities.	<ul style="list-style-type: none"> <li>• reading lengthy, complex, abstract <b>prose</b> texts as well as synthesizing information and making complex inferences</li> <li>• integrating, synthesizing, and analyzing multiple pieces of information located in complex <b>documents</b></li> <li>• locating more abstract <b>quantitative</b> information and using it to solve multistep problems when the arithmetic operations are not easily inferred and the problems are more complex</li> </ul>	<ul style="list-style-type: none"> <li>• comparing viewpoints in two editorials</li> <li>• interpreting a table about blood pressure, age, and physical activity</li> <li>• computing and comparing the cost per ounce of food items</li> </ul>

To provide information about demographic, social, and economic factors associated with adults at the Below Basic level, NCES has profiled these adults in terms of various background characteristics (see Kutner, Greenberg, and Baer 2005).

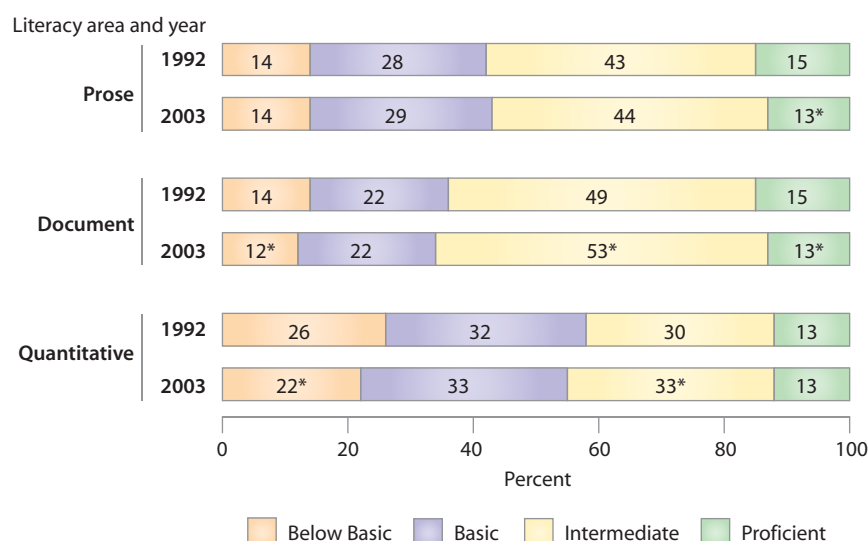
For each performance level, the percentage of adults who responded correctly to almost 100 different assessment tasks is included in the Sample Questions section of the NAAL website (<http://nces.ed.gov/naal/TestQuestions.asp>). For a brief discussion and an example of how specific tasks relate to the levels, see "Each performance level represents a continuum of abilities," later in this section.

<sup>1</sup>This level includes the lowest performers among those who could be tested. Adults whom interviewers determined to be untestable as a result of a language barrier are not included in the literacy results at all, because no literacy scores could be estimated for them. For more information, see "The new levels are supplemented by a *Nonliterate in English* category," earlier in this section.

NOTE: These performance levels are used to report results from the 2003 National Assessment of Adult Literacy (NAAL), including comparisons with results from the 1992 National Adult Literacy Survey (NALS). Although some of these performance levels share common names with levels used for the National Assessment of Educational Progress (NAEP), they do not correspond to the NAEP levels.

SOURCE: U.S. Department of Education, National Center for Education Statistics (NCES). Based on information from *Measuring Literacy: Performance Levels for Adults, Interim Report* (Hauser et al. 2005) as well as input from the NCES Assessment Division.

**Figure 8. Percentage of adults scoring at each performance level, by literacy area: 1992 and 2003**



The percentage of adults at each level varies by literacy area (prose, document, or quantitative).

\*Significantly different from 1992.

NOTE: Adults are defined as people age 16 and older living in households or prisons. Adults who could not be interviewed due to either a language barrier or a cognitive or mental disability (3 percent in 2003 and 4 percent in 1992) are excluded from this figure. (For more information, see "Administration procedures accommodate adults with special needs," in section 5.) Detail may not sum to totals because of rounding. The 1992 results presented in this figure are based on reanalysis of the 1992 data using procedures developed for the 2003 assessment.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992 National Adult Literacy Survey (NALS). Taken from figure 2 in *A First Look at the Literacy of America's Adults in the 21st Century* (Kutner, Greenberg, and Baer 2005).

Note that more adults scored at the lower levels for quantitative literacy than for prose and document literacy. One possible explanation for this is that NAAL quantitative tasks typically require most, if not all, of the skills typically required for prose or document tasks, plus specific quantitative skills. The skills common to the other task types are needed to effectively use the prose or document texts in which numbers for quantitative tasks are embedded, while the specific quantitative skills are needed to identify and perform the necessary computations.

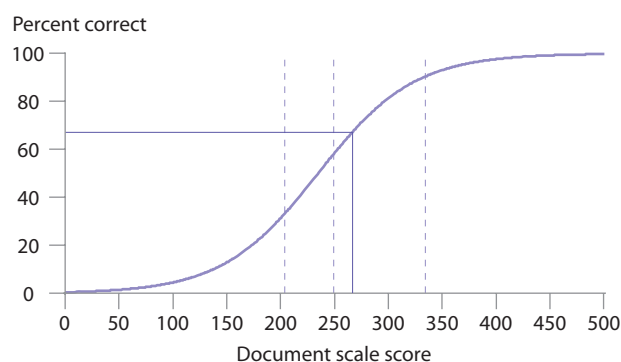
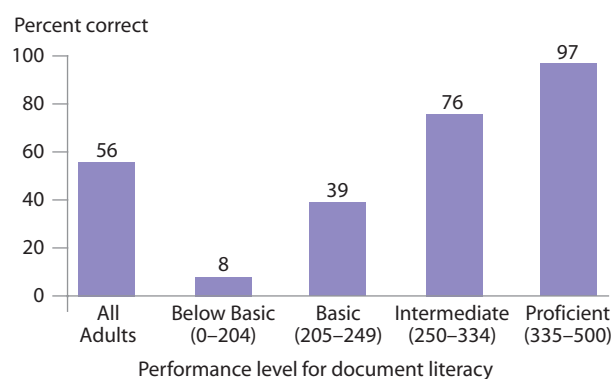
### Each performance level represents a continuum of abilities

Although certain tasks can be characterized as *typical* of each performance level (as shown in table 2, on the previous page), it is important to remember that the tasks at each level extend across a certain range of difficulty and therefore require a continuum of abilities. For example, the new *Basic* level of document literacy encompasses scores ranging from 205 to 249. Adults with a score of 205 (the lowest score included in the level) have a 67 percent rate of success with the *easiest* task at that level, while adults with a score of 249 (the highest score included in the level) have a 67 percent rate of success with the *most difficult* task at that level. This means that adults at the high end of the *Basic* level have an even higher rate of success with some of the level's easiest tasks. Moreover, these adults have a fairly high rate of success with some of the tasks at the low end of the *Intermediate* level, even though the rate is below 67 percent.

Regardless of the specific criteria used to establish performance levels, *adults at every level have some probability of performing any task correctly*. Therefore, it is not correct to say that adults at a certain performance level are “not able to do” tasks at higher levels. These adults are, however, less likely to succeed with such tasks. Figure 9 illustrates this fact by showing the percentage of adults at each of the new performance levels who were able to correctly perform a moderately difficult document task in 1992. For this particular task, the success rate ranged from 8 percent at the *Below Basic* level to 97 percent at the *Proficient* level.

**Figure 9. Percentage of adults able to correctly perform a sample document task in 1992, by performance level and scale score**

Moderately difficult document task—Determine correct type of sandpaper from table



NOTE: Adults are defined as people age 16 and older living in households or prisons. The 4 percent of adults who could not be interviewed in 1992 due to either a language barrier or a cognitive or mental disability are excluded from this figure. (For more information, see “Administration procedures accommodate adults with special needs,” in section 5.) In the line graph shown in this figure, the dotted vertical lines separate the performance levels. The solid guidelines draw attention to the relationship between a specific point on the scale—in this case, 266—and a 67 percent probability of correct performance.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992 National Adult Literacy Survey (NALS).

Section 1 of this publication shows this sample task in its entirety (see figure 3).

Although this task is associated with the Intermediate level, some adults at each level performed the task correctly. Adults with a score of 266 had a 67 percent probability of correct performance.

# 3

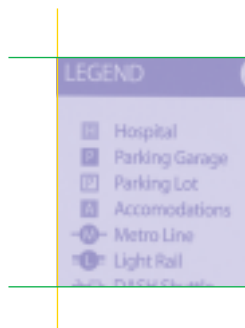
## PROVIDING INFORMATION ABOUT SKILLS UNDERLYING ADULT LITERACY

The 2003 National Assessment of Adult Literacy (NAAL) provides information about skills that are needed to successfully perform literacy tasks as well as skill deficits that impede task performance. Skills required for successful task performance range from basic, word-level skills (such as recognizing words) to higher level skills (such as drawing appropriate inferences from continuous text). Although different literacy tasks vary in the specific skills that they require, successful performance of virtually all literacy tasks requires at least some fundamental skills, such as the ability to read and understand common words.

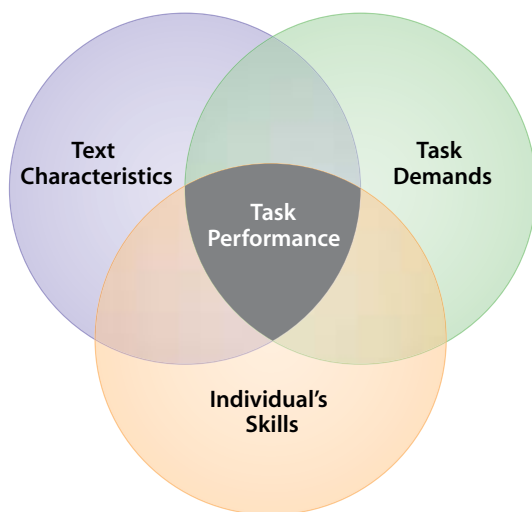
### A variety of skills are needed to perform everyday literacy tasks

Using printed and other written materials in everyday life requires multiple skills. The specific skills needed (as well as the necessary degree of skill proficiency) vary depending on the materials used and the task at hand. For example, computation skills are required only for quantitative tasks—such as determining how much paint to buy for a 20- by 30-foot room. While basic reading skills are needed for all literacy tasks, a higher level of these skills may be needed when the task requires understanding words that are less common and more difficult. Similarly, text search skills are used for finding a doctor's name and room number in a building directory as well as for locating a particular piece of information in a complex table, but the latter task requires a higher level of these skills.

The *difficulty* of a particular task is determined by the specific actions required (also called the task demands) and the characteristics of the written materials used for the task. Some types of task demands are generally less challenging than others. For example, reading words is generally less challenging than making inferences based on the text that one has read. Of course, some words are easier to read than others, and some inferences are easier to make than others. The level of skill needed to meet a task demand depends both on the nature of the demand itself (e.g., locating specific words) and on related text characteristics (e.g., alphabetical vs. random order of a word list to be searched). In order to successfully perform a task, an individual must be able to apply each required skill at the required level. Here is where each individual's unique skill development comes into play. For example, a task might involve locating several prices in a dense text and then comparing them. An individual with strong computation skills but weak text search skills might find it easier to compare the prices than to locate them. To accomplish the task, however, the individual would need to have adequate skills for meeting *all* the task demands. Underlying this analysis is the hypothesis that an individual's performance of a particular literacy task is jointly influenced by three key factors: the text characteristics, the task demands, and the individual's skills (figure 10).



**Figure 10. Factors influencing an individual's performance of a literacy task**



*Whether an individual can successfully perform a particular literacy task depends on the characteristics of the text used for the task, the requirements or demands set by the task itself, and the skills of the individual performing the task.*

SOURCE: White, S., and McCloskey, M. (forthcoming). *Framework for the 2003 National Assessment of Adult Literacy* (NCES 2006-473). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

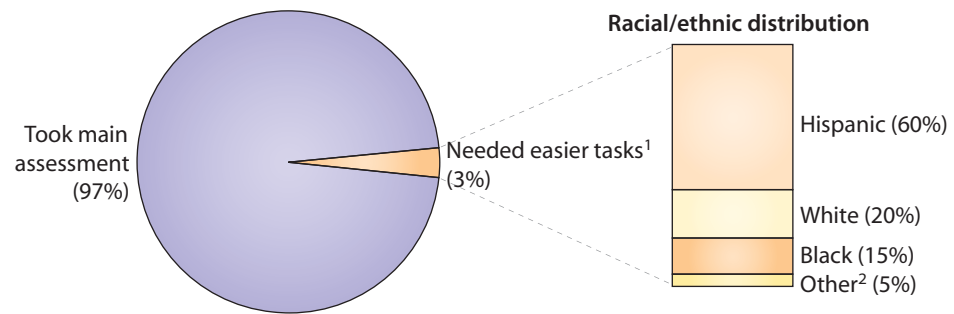
### NAAL includes new data on basic skills and the least-literate adults

The 1992 National Adult Literacy Survey (NALS) was not able to provide much information about America's least-literate adults, because these adults had trouble performing even the easiest assessment tasks. Thus, the 1992 NALS provided some indication of what these adults could *not* do, but almost no information about what they *could* do. To address this problem, the 2003 NAAL includes a new alternative assessment (discussed below) that features easier tasks and texts and is administered only to adults whose skills are not adequate for meaningful participation in the "main NAAL" (i.e., the main part of the assessment). The 2003 NAAL also includes a new component (discussed later in this section) that uses oral reading tasks to measure the basic reading skills of *all* adults. Data provided by this component will help clarify the role that basic skills play in literacy task performance.

### The least-literate adults take an alternative assessment

The least-literate adults' literacy skill levels and associated task performance are of particular interest to policymakers and literacy practitioners. The Adult Literacy Supplemental Assessment (ALSA) addresses the need for information about these adults, who would be able to perform few, if any, of the main NAAL assessment tasks. During the 2003 NAAL data collection, each participant first answered a background questionnaire and then was given a set of seven easy core screening tasks. Very low performance on the core screening tasks identified adults for whom the main NAAL would be too difficult and therefore would not provide a meaningful measure of performance. The screening process was designed to be conservative in routing adults to ALSA, so that all adults who were capable of meaningfully participating in the main NAAL would have an opportunity to do so. The adults who took ALSA (instead of the main NAAL) represented about 3 percent of all U.S. adults who were capable of being interviewed in English or Spanish (figure 11). The majority (60 percent) of ALSA participants were Hispanic.

**Figure 11. Percentage of adults requiring tasks easier than the main assessment tasks and distribution of these adults by race/ethnicity: 2003**



<sup>1</sup>Adults who performed very poorly on a set of screening tasks did not take the main assessment, but were routed instead to the Adult Literacy Supplemental Assessment (ALSA), which provides tasks designed specifically for the least-literate adults.

<sup>2</sup>The breakdown of "Other" is as follows: Asian only, 3 percent of ALSA sample; American Indian/Alaska Native/Native Hawaiian and Other Pacific Islander, 1 percent; two or more races, 1 percent.

NOTE: Adults are defined as people age 16 and older living in households or prisons. This figure includes all adults capable of being interviewed in English or Spanish. As shown, 3 percent of adults capable of being interviewed required tasks easier than those in the main assessment and were therefore routed to ALSA. This figure does not include the 3 percent of adults who could not be interviewed at all in 2003 due to either a language barrier or a cognitive or mental disability. (For more information, see "Administration procedures accommodate adults with special needs," in section 5.)

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2003 National Assessment of Adult Literacy (NAAL).

Unlike the main NAAL, ALSA has oral (rather than written) instructions, and the instructions can be given in Spanish instead of English. In addition, ALSA participants give oral answers, which can be in either Spanish or English.

ALSA offers an easier set of tasks designed specifically for adults who have very limited English literacy skills. ALSA participants are never asked to read more than a sentence or two of connected text in order to find an answer. For many tasks, they do not have to read connected text at all, but only have to identify an English word or a letter. About 70 percent of ALSA tasks measure adults' ability to apply basic skills (such as reading common words) to familiar, everyday materials (such as food packages). About 30 percent of ALSA tasks measure the ability to perform tasks that, although quite simple, do require use of some higher level literacy skills (such as searching for or making inferences about information).

The written materials used for ALSA are also easier than those used for the main NAAL. Unlike the ALSA instructions, however, the materials themselves are always in English. In order to gauge participants' familiarity with specific materials, the instructions for each ALSA task are preceded by the question, "Have you ever seen this before?" The materials are intended to be highly familiar (representing items used frequently by U.S. adults in their daily lives), tangible (including food packages, drug labels, etc.), and highly contextualized (having logos, pictures, etc.). However, ALSA participants cannot successfully perform the tasks simply by looking at the nonlinguistic context (e.g., the pictures on a food package). Although the nature of the materials facilitates the use of compensatory strategies, ALSA participants also need to read at least parts of the words (figure 12).



**Figure 12. Types of materials and examples of questions used in the alternative (easier) assessment**

Types of materials <sup>1</sup>	Examples of questions
<b>Labels/simple signs</b> Beverage bottle Cake mix box Aspirin bottle	What letter is this? Please read this [number] for me. Please point to the word “water.”
<b>Flyers/pamphlets/bills</b> Magazine ad insert Sale flyer Water bill	What does the label say people should do if they take too much of this? What kind of information does this section provide?
<b>More complex documents</b> Bus schedule U.S. atlas	

*ALSA materials and questions are generally much easier than those of the main NAAL. Results will describe basic reading skills of the least-literate adults when text is familiar, tangible, and contextualized.*

<sup>1</sup>The specific materials listed are similar (but not identical) to actual materials used in the assessment.  
 SOURCE: U.S. Department of Education, National Center for Education Statistics, 2003 National Assessment of Adult Literacy (NAAL), Adult Literacy Supplemental Assessment (ALSA).

## An oral reading component measures basic reading skills of all adults

After completing either the main NAAL or ALSA, all participants are asked to complete the Fluency Addition to NAAL (FAN), which requires them to read aloud in English. The purpose of the oral reading tasks is to measure adults' basic (i.e., word-level) reading skills—including fluency. The new FAN data on basic skills will help improve understanding of skill differences between adults who are able to perform relatively challenging literacy tasks and adults (including those routed to ALSA) who are not able to perform such tasks.

Like ALSA, FAN focuses on basic reading skills and has oral instructions that can be given in either English or Spanish. Unlike ALSA, however, FAN does *not* provide a context that permits the use of compensatory strategies to partially offset skill deficits. Participants are asked to simply read aloud from lists and passages that do not include any nonlinguistic clues (such as pictures). FAN materials include the following:

- *Pseudoword lists*, consisting of possible but nonoccurring English forms (e.g., “wike”), provide a measure of adults' ability to “decode” (or identify the sounds of) words with which they are not familiar.
- *Word lists*, consisting of English words arranged in increasing order of difficulty, provide a measure of adults' ability to recognize familiar words (often referred to as “sight words”) as well as to decode unfamiliar words.
- *Text passages*, consisting of 150–200 words each, provide a measure of adults' ability to read words in connected texts.



The FAN tasks are timed. Timing participants' performance gives an indication of their ability to apply basic reading skills automatically—without pausing to give conscious thought to the reading process. Initial FAN analyses will yield the following information:

- total number of words read (correctly or incorrectly);
- words read correctly as a percentage of total words read; and
- words read correctly per minute.

In preparation for scoring the FAN tasks, extensive work was done to ensure that correctness would be measured reliably and that speakers of nonstandard varieties of English would not be unfairly penalized. In a nutshell, scoring rules consider nonstandard pronunciations acceptable as long as they are consistent with the participant's general speaking pattern.

### **NAAL helps clarify the role of skills in the performance of literacy tasks**

Analyses of new types of data provided by the 2003 NAAL will shed light on the role that basic reading skills play in the literacy performance of adults. For example, FAN scores of ALSA participants and of main NAAL participants at various performance levels can be compared. Such comparisons will provide information about how reading speed and accuracy relate to success in performing literacy tasks. For instance, adults who cannot read most of the words in a text are not able to directly access the words' meanings. Therefore, these adults would be expected to perform poorly on literacy tasks, although the data may show that they have some success with tasks and materials with which they are very familiar. Adults who read slowly and with effort would be expected, for the most part, to have lower literacy scores than adults who read fluently. However, some adults who read fluently may struggle with certain tasks due to deficiencies in other literacy skills (e.g., weak computation or inferential skills). NAAL data are useful for exploring the critical question of how literacy skills and deficits relate to adults' literacy performance.





# 4

## EXAMINING LITERACY IN DIFFERENT SEGMENTS OF THE ADULT POPULATION

The 2003 National Assessment of Adult Literacy (NAAL) provides background information that is relevant to adult literacy performance and useful to various NAAL stakeholders. The information comes from an oral background questionnaire, administered using a computer-assisted personal interview (CAPI) system. To identify relevant and useful questions about adults' background characteristics, questionnaire designers referred to research, feedback from NAAL stakeholders, and information about recent U.S. demographic and social trends. The background questionnaire developed for the 2003 NAAL includes questions from 1992 as well as new questions. The new questions provide additional background information, while the questions common to both years allow comparisons of literacy performance across time for groups of adults who share various characteristics (e.g., comparisons of the 1992 and 2003 performance of adults who are female or Black).

When examining adult literacy performance by background characteristics, it is important to bear in mind that cause-and-effect relationships cannot be inferred from the data. Adult literacy performance may be affected by a complex mixture of circumstances beyond the scope of the NAAL analyses.

### Many factors are related to adult literacy

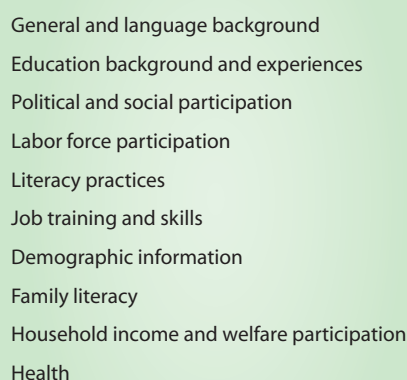
Factors related to adult literacy include demographic characteristics such as age, race/ethnicity, and language background. Social and economic factors such as income and education level are also associated with literacy. Assessment results are often reported by basic demographic, social, and economic categories of this sort. In addition to such basic categories, NAAL also provides more detailed background information. In both 1992 and 2003, for example, adults with a native language other than English were asked what their native language was, how old they were when they learned English, and what language(s) they were able to speak and read at the time of the assessment.

### NAAL expands knowledge of factors related to adult literacy

The questions on the enhanced 2003 background questionnaire can be grouped into 10 categories (figure 13). Questions included for the first time in 2003 cover a range of topics, including volunteer activities; job-related training; family literacy practices, such as reading to one's children; welfare participation; and technology use at home and on the job.

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**Figure 13. Categories of questions on the 2003 household background questionnaire**



- General and language background
- Education background and experiences
- Political and social participation
- Labor force participation
- Literacy practices
- Job training and skills
- Demographic information
- Family literacy
- Household income and welfare participation
- Health

*The expanded household background questionnaire for the 2003 NAAL includes 10 categories of background questions.*

SOURCE: White, S. (2003). *The 2003 National Assessment of Adult Literacy (NAAL)* (NCES 2003-495r). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

In response to the increasing age of the adult population in the United States, several new questions about health-related conditions and activities were added to the background questionnaire. Increasing diversity among U.S. adults prompted a number of new questions targeting adults who are not native English speakers. These questions cover topics such as assimilation into U.S. society, difficulty with reading and with using various documents, and participation in English as a Second Language (ESL) classes in the United States.

### **Expanded knowledge can help guide tailoring of information and services**

The ultimate purpose of collecting background information is to provide useful data to help inform a variety of decisions related to adult literacy. For example, examining health-related background information from the questionnaire in relation to performance data from the assessment can assist developers of health-related information in identifying target audiences for specific types of information and in developing materials geared to these audiences' literacy strengths and weaknesses. Similarly, background information about adults with a low level of literacy can assist in the development of literacy programs that better address their needs.

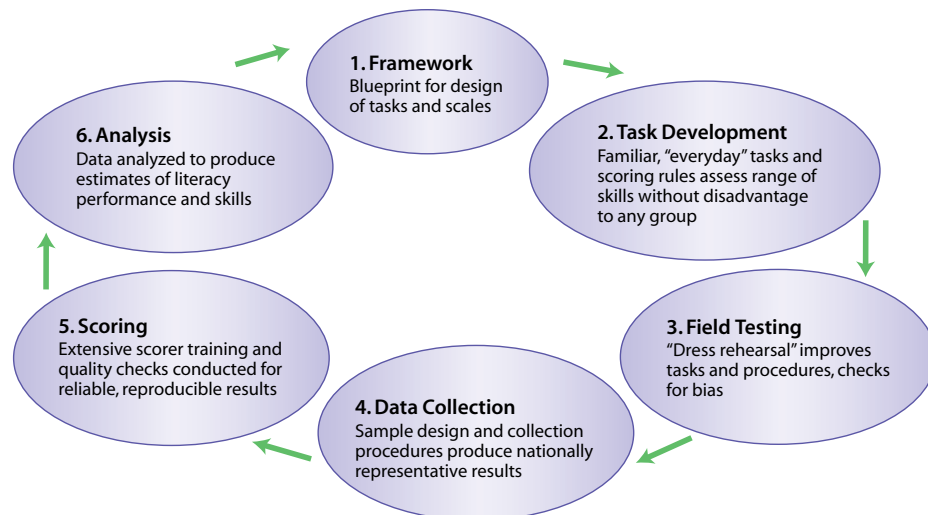
# 5

## DESIGNING, IMPLEMENTING, AND SCORING THE ASSESSMENT

### Research-based principles guide the assessment through several stages

The assessment cycle begins with consideration of what the assessment will measure and why. This type of information is generally documented in a publication called the “framework” for the assessment. Guided by the goals and principles documented in a framework, major National Center for Education Statistics (NCES) assessments such as the 2003 National Assessment of Adult Literacy (NAAL) typically proceed through a number of stages. The stages of the NAAL assessment cycle, shown in figure 14, flow logically from conception (the framework) through task development, field testing, data collection, scoring, and analysis. The cycles of related assessments are linked, with analysis of data from a particular assessment providing new information that has an impact on the framework and overall development of subsequent assessments. For example, results from the 2003 NAAL—along with data from follow-up studies and information about changing literacy requirements and demographics—will help to shape future administrations of NAAL.

Figure 14. Stages of the assessment cycle



SOURCE: U.S. Department of Education, National Center for Education Statistics, 2003 National Assessment of Adult Literacy (NAAL).

As researchers began to develop the 2003 NAAL, they referred to a framework (Campbell, Kirsch, and Kolstad 1992) that briefly outlines some of the principles underlying NAAL's predecessor, the 1992 National Adult Literacy Survey (NALS). The 1992 NALS framework was supplemented by detailed examination of the 1992 assessment tasks and results. This examination yielded additional information that helped guide development of the 2003 NAAL and was incorporated into a framework for the new assessment. Based on empirical and theoretical research, the framework for the 2003 NAAL (White and McCloskey forthcoming) elaborates and expands on information contained in the 1992 framework.

The NAAL framework defines the prose, document, and quantitative literacy areas and explains the importance of assessing adults' ability to perform literacy tasks similar to those encountered in real life. Characteristics of the tasks and associated texts are specified, as is the need for a broad range of tasks (in order to adequately represent task types and topics) and a broad range of task difficulty (in order to adequately measure skill variations among adults—especially adults at the lower end of the literacy continuum). Moreover, the framework defines and discusses in detail the basic as well as higher level cognitive and linguistic processes underlying the NAAL tasks. The NAAL framework is intended not only to enhance understanding of the 2003 NAAL, but also to inform additional research into adult literacy, including a number of NAAL follow-up studies being conducted by NCES.

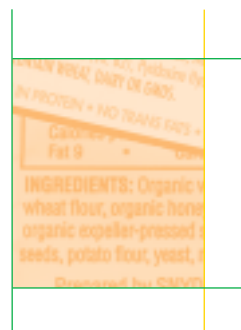
Some of the key points covered in the NAAL framework are outlined in abbreviated form in the previous sections of this publication, especially section 1. The remainder of the current section briefly outlines a few key features of the sample design, test booklet configuration, administration procedures, and scoring procedures used for NAAL. NCES is producing a technical report that provides detailed documentation of the methodology employed at each stage of the assessment cycle.

### The NAAL sample represents all adults in U.S. households and prisons

The NAAL sample represents all U.S. adults—i.e., individuals age 16 and older (including those still in high school or college)—who live in households or prisons. For the 2003 NAAL, a national sample of the adult household population was combined with samples for the six states that participated in the NAAL state-level assessment. Supplementing the combined national and state household sample was a sample that represented the 2003 prison population at the national level. Of the 19,714 adults who made up the 2003 NAAL sample, 18,541 were from the household sample and 1,173 were from the prison sample.

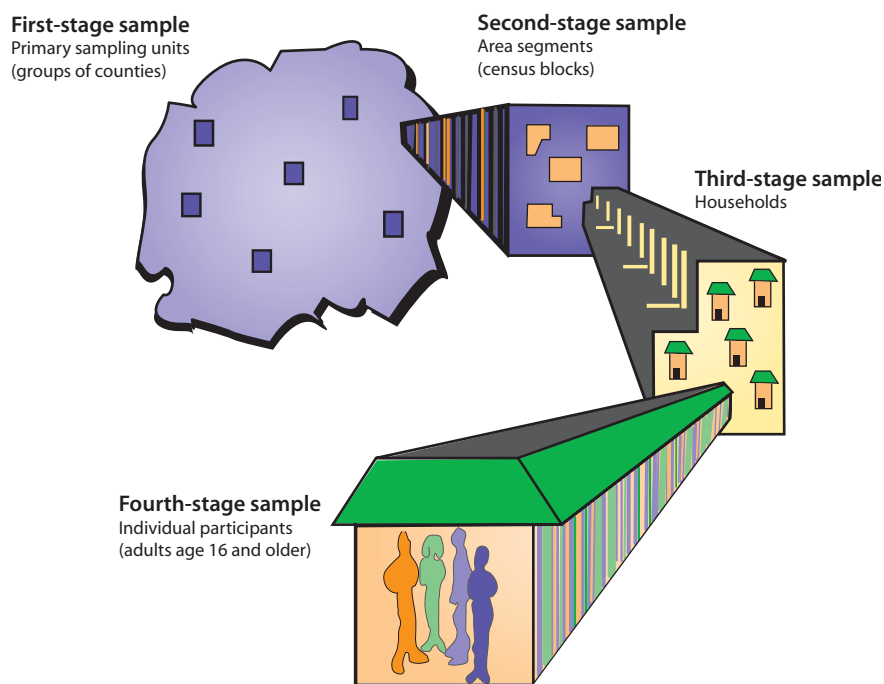
As illustrated in figure 15 and briefly described below, the household sample for the 2003 NAAL was selected using a four-stage stratified area design.

- *Stage 1—Selecting primary sampling units (PSUs).* Based on data from the 2000 census, NAAL sampling experts divided the United States into nearly 1,900 PSUs. Each PSU consisted of either a county or a group of adjacent counties. (Formation of the PSUs was guided by a minimum population size and maximum geographic area, with one aim being to limit the distance that interviewers would have to travel within their assigned PSUs.) The PSUs were stratified based on (1) whether they were classified as metropolitan areas in the 2000 census, and (2) the demographic and socioeconomic characteristics of their population. Within each stratum, the larger the population of a PSU, the more likely the PSU was to be selected. Altogether, 160 PSUs were selected for NAAL.



- *Stage 2—Selecting area segments.* Within each selected PSU, area segments (census blocks or groups of blocks) were selected. In general, the greater the number of housing units contained in an area segment, the more likely it was to be selected. However, area segments that were classified as high minority (more than 25 percent Black or Hispanic) were oversampled at the national level. Oversampling of minorities was necessary to ensure that the minority samples would be large enough to conduct meaningful analyses.
- *Stage 3—Selecting households.* Field staff visited all selected area segments and prepared lists of all housing units located within the segments. Within each segment, households were selected with equal probability (except within high-minority segments, where minority households were sampled at a higher rate than nonminority households).
- *Stage 4—Selecting individual participants.* For each selected household, field staff constructed a list of eligible members (i.e., those age 16 and older). One person was selected at random from households with fewer than four eligible members, and two people were selected at random from households with four or more eligible members. If selected members were temporarily away from home (e.g., because of a short-term hospitalization or a brief stay in jail), every effort was made to interview them after they returned. Most college students staying in dormitories were interviewed at their family homes during spring or summer break. However, if students could not be reached at their family homes, they could be interviewed in their dormitories if feasible. Former household members no longer residing in the household—e.g., nursing home residents or armed forces personnel stationed elsewhere—were not included in the sample.

**Figure 15. Four-stage sample design for the household sample**



SOURCE: Available in the Design and Development section of the 2003 National Assessment of Adult Literacy (NAAL) website (<http://nces.ed.gov/naal/index.asp?file=DesignDevelop/Sampling.asp&PageID=53>).

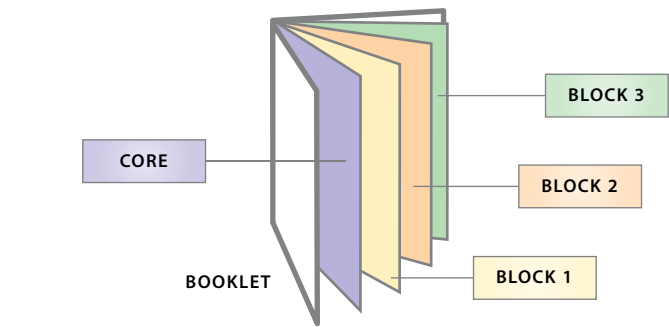
The NAAL prison sample was independently selected using a two-stage design. The first stage was to select more than a hundred prisons. (Note that the sample included only state and federal prisons, not local jails or other types of institutions.) The second stage was to select individual inmates of the prisons that had been selected. Large prisons were more likely than small prisons to be included in NAAL, but individual inmates were more likely to be selected from the small prisons that were included. As a result of this sampling method, 11 inmates were typically selected from each sampled prison, and (with few exceptions) each inmate in the prison population had an equal chance of being selected. The resulting sample was representative of the 2003 prison population at the national level, allowing separate literacy estimates for this population. As previously mentioned, this sample was also used to supplement the household sample. Because of the disproportionate percentages of male, minority, young, and poorly educated adults in the prison population, the prison sample increased representation of adults with these characteristics in the overall sample.

**Block design limits participant burden and allows cross-year comparisons**

The main NAAL has a total of 152 assessment tasks, which are needed to cover the content and literacy skills identified as important for using printed and other written materials in everyday life. Because the whole set of tasks would take more than 3 hours to complete, NAAL administers only a portion of them to each participant. Block design refers to the way in which the tasks are organized into groups, or “blocks,” and the way these blocks are distributed among the various booklets that are administered to participants.

All the booklets begin with seven easy core screening tasks (as explained below). The remaining tasks are grouped into 13 blocks—6 blocks repeated from the 1992 assessment and 7 blocks newly created for the 2003 assessment. Each block contains 10 to 15 tasks and includes some tasks from each of the three literacy scales (prose, document, and quantitative). The blocks are assembled into 26 unique assessment booklets, each of which contains a total of 3 blocks (figure 16). Each of the 26

**Figure 16. Block configuration of the test booklets**



*Each booklet contains the same set of seven core screening tasks plus three blocks (i.e., groups) of tasks.*

Booklet content	
2 booklets	All three blocks reused from 1992
9 booklets	Two blocks reused from 1992 and one block new in 2003
12 booklets	Two blocks new in 2003 and one block reused from 1992
3 booklets	All three blocks new in 2003
Total 26 booklets	

*The 21 (out of 26) booklets that contain both 1992 and 2003 blocks are more than adequate to put both the 1992 and the 2003 blocks onto the same scales for scoring.*

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2003 National Assessment of Adult Literacy (NAAL).



Note: Checking the box for "Do you, or your spouse, have a disability?" is required for the assessment. If you are not sure, please check the box for "Do you, or your spouse, have a disability?" and full name here.

☐ Single

☐ Married filing jointly

☐ Married filing separately and full name here

☐ Yourself. If you return

booklets is completed by a random sample of participants. Most of the booklets contain blocks from both 1992 and 2003, a design feature that is necessary to allow comparison of results across years. (For more information about cross-year comparisons, see section 2.) Each block appears in 6 of the 26 booklets; appears once in the same booklet with each of the other blocks; and appears twice in the first position, middle position, and last position in a booklet. These design features—collectively referred to as “spiraling”—help control for potential variation in the performance of tasks due to their positions in the booklets and relative to other tasks.

### Assessment administration follows standardized procedures

NAAL is administered in person. Participants are assured of confidentiality and advised that responses and scores are reported collectively, not individually. The entire interview takes about 90 minutes for most participants and about 15 minutes less for the least-literate participants, who take the Adult Literacy Supplemental Assessment (ALSA) instead of the main NAAL. All participants begin the interview by responding to an oral background questionnaire, administered using a computer-assisted personal interview (CAPI) system. Participants are then given the seven easy core screening tasks to determine whether they should take the main NAAL or ALSA. Main NAAL participants read the assessment questions from printed booklets and write their answers using a pencil. ALSA participants give oral responses to oral questions, but refer to printed materials to find the answers. At the end of the interview, all participants take the Fluency Addition to NAAL (FAN), which requires them to read lists and passages aloud from printed booklets. Participants’ responses to FAN are recorded using special CAPI software, which incorporates automatic speech recognition technology.

### Administration procedures accommodate adults with special needs

The following accommodations for adults with disabilities and nonnative speakers of English are inherent in the design of NAAL:

- The assessment is conducted in the participant’s home.
- The assessment is administered one on one.
- All participants receive additional time, within reason, to complete the main NAAL or ALSA if they need it.
- Participants are encouraged to use whatever aids they usually use to work with written materials (e.g., a magnifying glass).
- Participants who are physically unable to write (e.g., because of severe arthritis) may dictate their responses to the interviewer.
- The background questionnaire is administered orally in either English or Spanish, depending on the participant’s choice.
- General instructions and specific questions for the core screening tasks can be given in either English or Spanish, and the general instructions are given orally.
- ALSA instructions and questions are given orally in either English or Spanish.
- Participants with a native language other than English or Spanish may attempt the core screening tasks—and take either ALSA or the main NAAL, if they are able—even if they cannot complete the background questionnaire.

Because NAAL is designed to assess literacy in English, all the written instructions and responses are in English. However, results for nonnative speakers of English will be reported separately and compared with results for native speakers in order to shed light on the unique needs of nonnative speakers. Information about disabilities is also included in the background questionnaire and is related to NAAL scores. In addition, reasons for noncompletion of tasks are recorded, because this type of information helps researchers understand relationships between literacy and disabilities as well as between literacy in English and nonnative speaking status.

NAAL does not exclude any adults with special needs from participating in the assessment. As part of the NAAL sample, these adults are encouraged to participate to the extent that they are able to do so. In 2003, approximately 3 percent of adults were unable to participate in the assessment at all (i.e., they could not even participate in ALSA). Of these adults, almost two-thirds could not be interviewed due to a language barrier (i.e., they knew neither English nor Spanish). Almost one-third had a cognitive or mental disability (e.g., Alzheimer's disease, mental retardation, or mental impairment caused by a stroke).

Adults with a language barrier were identified by trained interviewers, who attempted to interview these adults. To identify adults with a cognitive or mental disability, on the other hand, interviewers typically relied on the report of someone else in the household (i.e., they generally did not attempt an interview with these adults).

In both 2003 and 1992, about 1 percent of adults were unable to participate due to a cognitive or mental disability. However, the percentage of adults unable to participate due to a language barrier fell from 3 percent in 1992 to 2 percent in 2003. This decrease probably occurred because of new accommodations for Spanish-speaking adults (see the seventh and eighth bullets on the previous page).

### Scoring of tasks ensures reliability and reflects NAAL's emphasis on function

A scoring guide for each assessment task details the rules for scoring that task. The NAAL scoring rules seek evidence that adults can use printed materials to accomplish everyday literacy tasks. Thus, responses containing writing errors are still considered correct as long as the overall meaning is correct. Incomplete sentences, grammatical and spelling errors, or the use of synonyms to provide requested information do not affect the scoring of responses. Also, it does not matter if a response is circled (rather than written out) or if it is written somewhere other than on the line provided (unless the task is to fill in a form). Training materials for scorers include examples of responses that should be scored as correct even though they contain writing errors.

The scoring stage of the 2003 NAAL involved thorough training of scorers and multiple quality checks. To ensure reliability of scoring, supervisors spot-checked scores given to various tasks and provided feedback to scorers. In addition, a second scorer rescored 50 percent of all tasks to verify a high rate of interrater reliability (i.e., agreement between scorers on the scores assigned). If interrater reliability fell below 95 percent, supervisors identified reasons for scoring discrepancies and discussed these reasons in a meeting with scorers. The final interrater reliability rates were above 95 percent for all but five tasks and at least 94.5 percent for all but two tasks.

*Although no literacy results can be provided for adults with a language barrier, these adults were included in the new Nonliterate in English category in 2003 (see the discussion of this category in section 2).*

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